

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions and listings of claims in the application:

LISTING OF CLAIMS:

1. (currently amended): A structure, comprising:

a shaft member, the shaft member being formed out of a first material, the shaft member having an outer periphery formed with an axial groove and a circumferential groove, each of said grooves having a cross section having opposed faces substantially parallel to each other;

a cylindrical member fitted to the outer periphery of the shaft member, the cylindrical member being formed out of a second material, the second material being greater in linear expansion coefficient than the first material; and

a caulked portion provided to the cylindrical member at an intersection of the axial groove and the circumferential groove,

the caulked portion having a continuous and deformed inner surface in press contact with the opposed faces of the axial groove and the circumferential groove at the intersection, and

wherein the axial groove is greater in depth than the circumferential groove.

2. and 3. (canceled).

4. (previously presented): The structure as claimed in claim 1, wherein a circumferential width of the caulked portion is greater than a circumferential width between the opposed faces of the axial groove at the intersection.

AMENDMENT UNDER 37 C.F.R. § 1.111
Appln. No. 10/684,684

5. (original): The structure as claimed in claim 4, wherein the caulked portion comprises a first caulked part corresponding to the circumferential groove and a second caulked part corresponding to the axial groove, the second caulked part being arranged substantially in a middle of the first caulked part.
6. (original): The structure as claimed in claim 1, wherein the axial groove comprises a plurality of groove portions in a circumferential direction.
7. (original): The structure as claimed in claim 6, wherein the plurality of groove portions of the axial groove are three in number.
8. (original): The structure as claimed in claim 1, wherein the cross section of the axial groove and the circumferential groove is rectangular.
9. (previously presented): The structure as claimed in claim 1, wherein the cylindrical member is apart from the shaft member except the caulked portion.
10. (original): The structure as claimed in claim 1, wherein the axial groove has an opening edge formed at an acute angle.

AMENDMENT UNDER 37 C.F.R. § 1.111
Appln. No. 10/684,684

11. (previously presented): The structure as claimed in claim 1, further comprising an input shaft and an output shaft, wherein the shaft member comprises one of the input shaft and the output shaft, the input shaft and the output shaft arranged relatively rotatably with respect to each other, the input shaft and the output shaft being used for a torque sensor of an electric power steering apparatus.

12. – 20 (cancelled)

21. (currently amended): A structure, comprising:
a shaft member, the shaft member being formed out of a first material, the shaft member having an outer periphery formed with at least one of an axial groove and a circumferential groove, the at least one groove having a cross section having opposed faces substantially parallel to each other;

a cylindrical member provided to the outer periphery of the shaft member, the cylindrical member being formed out of a second material, the second material being greater in linear expansion coefficient than the first material; and

a caulked portion provided to the cylindrical member at a position corresponding to the at least one groove of the shaft member, the caulked portion having a deformed inner surface in press contact with the opposed faces of the at least one groove;

wherein the cylindrical member is spaced apart from the shaft member by a clearance except the caulked portion.

AMENDMENT UNDER 37 C.F.R. § 1.111
Appln. No. 10/684,684

22. (new): The structure as claimed in claim 10, wherein the axial groove has the opening edge formed at the acute angle at the intersection.
23. (new): The structure as claimed in claim 21, wherein the clearance is sufficient to loosely fit an inner periphery side of the cylinder over the shaft outer surface.
24. (new): The structure as claimed in claim 23, wherein the clearance is established at room temperature.